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Perf5GMaritime

Long-range ship-to-shore connectivity for greater efficiency and less pollution

What it is

CEA-Leti developed this long-range ship-to-shore communications system based on a private 5G network that transmits data about incoming ships to the port. It includes the on-shore rooftop base station, the mobile stations installed on the ships, and the 5G core network software.

Managing traffic is a major concern for ports worldwide. Improving the orchestration of incoming and outgoing traffic and optimizing the loading and unloading of container ships at berth can impact operating efficiency and safety. Plus, ports are growing contributors to global GHG emissions: The faster ships are in and out of port, the better.

This solution lets ships send data about their identity and cargo to the port from a distance of 30 kilometers.

What it can do

This kind of private 5G network has several maritime applications:

- Port authorities could equip their ports and require it of incoming ships.
- Shipping companies with large fleets could use it to gather data on their ships and offer the data to port authorities as an additional service.
- Maritime network operators could offer long-range communications as a service.
- Scientific exploration and other ships can be connected to the internet to transmit measurement data, video footage, etc.

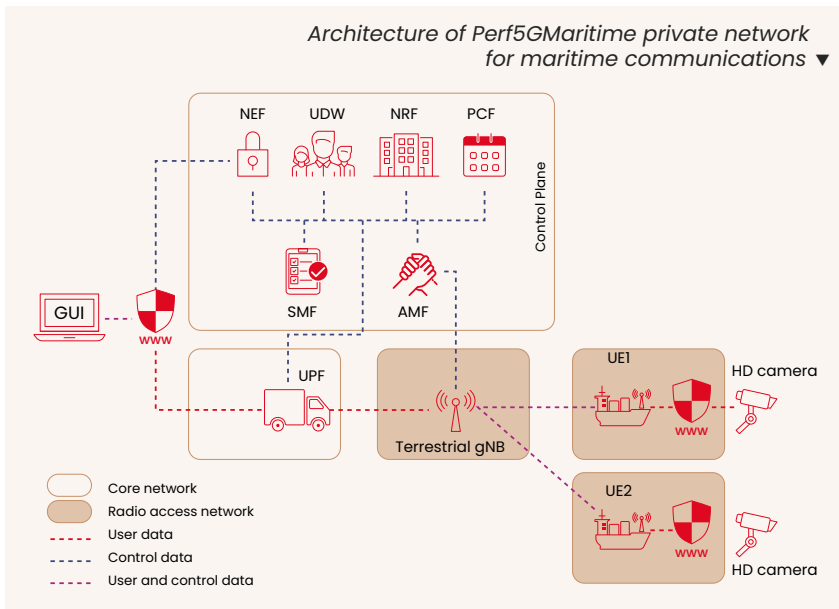


What makes it unique

Long-range ship-to-shore communications depend on expensive satellite systems or on public 4G and 5G networks, whose range is limited to well under ten kilometers.

In the frame of a France 2030 project, this breakthrough solution was custom developed for CEA-Leti partner iQanto, which was seeking a much longer range.

CEA-Leti implemented a patented 5G waveform that can be used near public networks in crowded areas (like ports) without interference, enabling the exceptionally long range. The 5G core network software was also custom developed for network configuration and monitoring in maritime use cases.



What's next

CEA-Leti now has all the components of a private long-range telecommunications network for demanding transmission environments and can adapt the solution to any scenario that requires long range and good data rates. For instance, offshore windfarms could be connected for monitoring and data transmission.

At a glance

- TRL: 6
- 20 Mbps at 30 km
- Up to 6x the range of 5G public networks



▲ Base station (gNb) deployed at CEA-Grenoble

Interested in this technology?

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